Appl. No. 10/734,927
Amdt. date November 1, 2005
Supplemental Reply to Office action of May 12, 2005

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) An arc fault detector for detecting arc faults in three phase aircraft power systems, comprising:

three full wave rectifiers, each of the three full wave rectifiers having an input of a load current in the three phase power system and ~~each~~ having an output connected to one of a plurality of threshold detectors;

a three input comparator having at least three inputs, each of the at least three inputs ~~connected to~~ being connected to an output of ~~each of~~ one of the plurality of threshold detectors; and

a fault verification circuit connected to an output of the three input comparator.

2. (Currently Amended) The arc fault detector of claim 1, wherein each of the plurality of threshold detectors comprises:

a first comparator having: a first input connected to an output of one of the full wave rectifiers[[,]]; a second input connected to a signal indicative of a predetermined threshold; and

an output.

3. (Currently Amended) The arc fault detector of claim 2, wherein each of the plurality of threshold detectors further comprise an integrator configured to integrate the output of the first comparator.

4. (Previously Presented) The arc fault detector of claim 1, wherein the three input comparator is configured to generate a signal indicative of the outputs of any two of the threshold detectors differing by more than a predetermined amount.

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5. (Previously Presented) The arc fault detector of claim 1, wherein the fault verification circuit comprises:

an integrator connected to the output of the three input comparator; and

a comparator connected to the output of the integrator and configured to generate a signal indicative of the detection of a fault, when the output of the integrator exceeds a predetermined threshold.

6. (Currently Amended) An arc fault detector for detecting arc faults in three phase aircraft power systems, comprising:

means for generating [[a]] three load currents in the three phase system ~~signals~~, where each load current in the three phase system is indicative of each of the three phases;

means for rectifying the generated load currents ~~signals~~;

means for comparing the three rectified load currents ~~signals~~; and

means for generating a signal in response to the three rectified load currents ~~signals~~ differing for a time period exceeding a predetermined duration.

7. (Currently Amended) The arc fault detector of claim 6, further comprising:

means for detecting that one of the three rectified load currents ~~signals~~ exceeds a predetermined threshold; and

wherein the means for generating a signal in response to the three rectified load currents ~~signals~~ differing for a time period exceeding a predetermined duration generates a signal if at least one of the three filtered load currents ~~signals~~ exceeds the predetermined threshold.

8. (Currently Amended) A method of detecting arc faults in three phase aircraft power systems, comprising:

detecting when at least one of ~~the three phases~~ the three load currents in the three phase power system has~~ving~~ a current exceeding a predetermined threshold;

detecting differences between the three ~~phases~~ load currents; and

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generating a signal indicative of differences being detected between the three ~~phases~~ load currents for a time period exceeding a predetermined duration.

9. (Currently Amended) The method of claim 8, wherein detecting ~~the detection of~~ differences ~~further~~ comprises:

generating load currents in the three phase system, each load current ~~signals~~ indicative of [[each]] one of the three phases; and

generating a signal indicative of at least two of the three load currents ~~signals~~ differing by more than a predetermined amount.

10. (Currently Amended) The method of claim 9, wherein detecting ~~detection of~~ differences further comprises continuously monitoring the load currents ~~signals~~ indicative of the three phases.

11. (Currently Amended) The method of claim 9, wherein detecting ~~the detection of~~ differences further comprises continuously sampling the load currents ~~signals~~ indicative of the three phases.

12. (Currently Amended) The method of claim 9, wherein generating a signal indicative of at least two of the three load currents ~~signals~~ differing by more than a predetermined amount[[,]] ~~further~~ comprises integrating over at least one cycle each of the load currents ~~signals~~ indicative of each of the three phases ~~over at least one cycle~~.

13. (Currently Amended) The method of claim 12, wherein generating a signal indicative of at least two of the three load currents differing by more than a predetermined amount ~~signals indicative of each of the three phases~~ further comprises:

comparing the magnitude of each load current [[phase]] to a predetermined threshold; and

generating a signal for each load current [[phase]] indicative of the magnitude of the load current ~~signal~~ relative to the threshold.

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14. (Currently Amended) The method of claim 8, wherein generating a signal indicative of differences being detected between the three load currents ~~phases~~ for a time period exceeding a predetermined duration ~~further~~ comprises:

generating a signal indicative of the time period during which at least two of the three load currents ~~phases~~ differ by more than a predetermined amount; and

comparing the generated signal to a signal indicative of the predetermined duration.

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